GENETIC BASE OF ANDEAN RED-SEEDED BEAN CULTIVARS OF LATIN AMERICA

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Red-seeded beans belonging to Andean gene pools are grown mainly in Colombia and the Caribbean, and to a lesser degree in northern Ecuador and southern Peru. If we consider within the red group those market classes that show red only as a pattern of a predominantly light primary color, such as the Cranberry (Frutilla) class, then the geography of the red seed-coated beans has to include Mexico, Chile, Uruguay and Brazil as well. To give an idea of preferred market classes, a partial list of the red-seeded cultivars of Andean origin grown in Latin America is shown in Table 1. From a total of around 100 cultivars of this type, only 19 are of hybrid origin. Diacol Nutibara and Diacol Nima, released in 1957 and 1958, respectively, are the oldest Andean red- seeded cultivars of hybrid origin; Frijolica LS 3.3 is the only red-seeded climbing cultivar (type IV) derived from a cross.

Table 1. Some red-seeded Andean cultivars grown in Latin America.

Identification	Market Class	Identification	Market Class
COLOMBIA		DOMINICAN REP.	
Bola Roja	Bolón	Constanza	Algarrobo
Cargamanto	Cranberry	José Beta	Pompadour
Diacol Andino*	Pink Cranberry	PC-50	Pompadour
Diacol Calima*	Algarrobo	Pompadour Checa	Pompadour
Diacol Cattó*	Cafetero	Pompadour Mocana	Pompadour
Diacol Nima*	Algarrobo		
Diacol Nutibara*	Algarrobo		
Estrada Rosado	Pink Cranberry	ECUADOR	
ICA Cafetero*	Cafetero		
ICA Caucayá*	Algarrobo	Algarrobo	Algarrobo
ICA Citará*	Algarrobo	Bolón Rojo	Bolón
ICA Cuna*	Sangretoro	Cargabello	Algarrobo
ICA Duva*	Long Red	Imbabello	Algarrobo
ICA Guaitará	Algarrobo	INIAP 402	Long Red
ICA Gualí*	Algarrobo	INIAP 404	Algarrobo
ICA Palmar*	Algarrobo	Paragachi	Algarrobo
ICA Quirama*	Cranberry	Percal Blanco	White Cranberry
ICA Toné*	Radical	Percal Rojo	Pink Cranberry
ICA Tundama*	Cafetero	Sugar 55*	Cranberry
Frijolica LS-3.3*	Cranberry	Uribe	Pink Cranberry
Frijolica O-3.1*	Algarrobo		
Frijolica O-3.2	Purple mottled		
Frijolica P-1.1*	Algarrobo	HAITI	
Radical	Radical		
Sangretoro	Sangretoro	Salagnac (s)	Algarrobo
Uribe Rojo	Pink Cranberry	Kenscoff	Miss Kelly
Uribe Blanco	White Cranberry	Camperrin	Purple mottled

BELIZE		JAMAICA	
Miss Kelly	Miss Kelly	California RK (s)	RK
Red Kidney	RK	Cockstone	Pink Cranberry
		Long Red	Long Red
		Miss Kelly	Miss Kelly
BRAZIL			
Bagajo	Small Cranberry	MEXICO	
Roxao	Purple	Cacahuate Bolita	Cranberry
Vermelho Rajado	Algarrobo	Cacahuate Largo	Cranberry
		PANAMA	
CHILE		Calima	Algarrobo
Araucanos	Cranberry	Chileno	Cranberry
Redkloud	RK	Rosado	RK
		PERU	
CUBA		Rojo Mollepata	RK
Mulangrí	Miss Kelly		Purple
Velasco Largo	RK	URUGUAY	
Guama 23*[1]	Algarrobo	Frutilla	Cranberry

* Hybrid origin, [1] Frijolica P-1.1

A total of 24 different landraces contributed to the genetic composition of 19 red-seeded cultivars. Coefficients of parentage (r) among cultivars and among their ancestors were calculated. Nine ancestors, all of them Andean types of the race Nueva Granada, contributed 70 percent of the genes (Table 2). Genetic contribution from other races of the Andean or Mesoamerica gene pools was relatively small.

Table 2. Most used ancestors of the Andean red-seeded cultivars: their genetic contribution and presence in the pedigree of cultivars.

	Genetic contribution (%)			
Genotype	Mean	Cumulative	Presence in pedigree of n cvs.	Race
Antioquia 10	15.2	15.2	10	NG
Peru 5	14.5	29.7	11	NG
Italia 5	9.3	39.0	4	NG
Redkote	8.2	47.2	5	NG
Antioquia 9	7.3	54.5	5	NG
Antioquia 6	6.6	61.1	2	NG
Antioquia 23	4.0	65.1	2	NG
Antioquia 8	4.0	69.1	2	NG
Antioquia 25	2.6	71.7	1	NG
Other Andeans (8)[1]	13.8	81.5	-	NG/P
Mesoamerica (5)	10.5			M
Unknown (2)	4.0			-

NG = Nueva Granada, P = Peru, M = Mesoamerica, [1] Number of genotypes

This analysis shows the reduced genetic base in the Andean red-seeded beans and the need to explore the possibilities of variation derived from interracial crosses, especially from different domestication centers.